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The Magazine of Effective Compartmentation

Life Safety DIGEST

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The Developing Height and
Area Table Code Proposals

Putting An End to the
Tragic Equation

Understanding the Updated
NFPA 80 Standard



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Editors' Message

Effective Compartmentation involves dividing large areas into compartments to contain fires to the room or area of origin until either automatic or firefighter suppression systems extinguish the blaze, or it runs out of oxygen.

Important elements of Effective Compartmentation include the fire, smoke or other resistance-rated floors and walls with openings protected by firestopping, fire and smoke dampers, swinging and rolling fire doors, and fire rated glazing all working as a system for protection and/or security.

There are new developments in the Effective Compartmentation industry. The Firestopping Quality Process that started in the Firestopping Industry with FM 4991, the Standard for Approval of Firestop Contractors has grown with UL entering the market with the new UL Qualification of Firestop Contractor Program. UL also worked with the National Fireproofing Contractors Association to develop a similar program. These standards are meant to be specified by the design professional to increase the quality of installation, and resulting reliability. Independent inspection protocols ASTM E 2174 & ASTM E 2393 are gaining steam as well. Regardless of code requirements, we find architects are specifying the quality process, an FM Approved / UL Qualified Contractor with inspection by an independent inspection firm to ASTM E 2174 & ASTM E 2393 Standards for the Inspection of Penetration and Joint Firestop Systems because it makes sense for

their client.

This issue contains articles about the FM 4991 Designated Responsible Individual (DRI) Exam by FM Approvals, in depth articles and an extended Code Corner about the ICC Code Development Process, the need for compartmentation from another perspective, and an article about NFPA 80 from the Door and Hardware Institute.

Enjoy this collection of articles from the Effective Compartmentation industries. Join the associations that support effective compartmentation and FCIA because as a group, our education will establish fire and life with compartmentation as a key component. Effective Compartmentation saves lives.

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Ruskin

The Developing Height and Area Table Code Proposals

By Bill McHugh

Firestopping, effective compartmentation and other professionals met recently to discuss the differences in height and area code change proposals for the International Building Code (IBC) submissions for the 2006/2007 Code Cycle. There were about 20 different fire safety proposals for the Height and Area Tables in Chapter 5 that were heard by the Code Development Committee at Code Development Hearings in Orlando, FL, September 2006.

In an interesting move, representatives from the National Association of State Fire Marshals, effective compartmentation and structural protection industries, including the Portland Cement Association, Alliance for Fire and Smoke Containment and Control, International Association of Fire Fighters, agreed to meet with representatives of AIA, American Forest and Paper Association, American Iron and Steel Institute, Building Owners and Managers Association, US General Services Administration, and others to work out the differences in these many Height and Area Table Code Change Proposals.

During these meetings in October, November, December of 2006, January of 2007, comments were heard from the National Association of State Fire Marshals and California Fire Service and Building Officials that buildings may have become too large in area under the IBC. Under areas in the Uniform Building Code jurisdiction, larger and taller buildings may not have been permitted without compartmentation to break zones into smaller areas. Others stated that the code is fine.

Under the current IBC building code, the amounts of compartmentation and structural fire resistance required has decreased significantly. As a result, the code relies heavily on sprinklers to protect buildings from fire, smoke and other risks. The code exists as it does because to consolidate the US into one building code, the new code could not put a building into non-compliance upon adoption. The Height and Area tables are one aspect of the code where compartmentation measures, such as fire-resistance rated walls and floors used for corridors, area separations, and dividing large areas into smaller cubes, could be strengthened to possibly increase safety in buildings.

Some representatives from fire protection engineers to trade associations, pointed out that the Height & Area Tables were untouched for years. Carl Baldassarra,

Schirmer Engineering stated that "we put them together (for the IBC), and now it's a big issue." Baldassarra stated. "There are more sprinkler and detection systems than before in the code, sprinklers are expensive, so we need economic incentives."

Dennis Richardson, a building official from San Jose, Calif., reacted differently. "I'm just not sure how the building is going to react in a fire with these new changes," he said.

The Code Consultant to the Fire Rated Glazing Industry and Firestop Contractors International Association, Bill Koffel, of Koffel Assoc., spoke at the Nov. 15 Height and Area Study Group Meeting about an approach that viewed compartmentation as a strategy to deal with height and area. Koffel was chairman of the NFPA Task Group that studied height and area. Koffel was asked by Dave Collins, AIA, of the Preview Group, and co-chairman of the ICC Height and Area Study Task Force, to report on how the NFPA 5000 Height and Area Tables were developed. These tables are contained as an alternative approach and are published as an Annex in NFPA 5000.

According to Koffel, "NFPA studied the issue of Height and Area and conclusions were that an increase in compartmentation meant that there could be an increase in height and area of the building, and still accomplish fire safety. NFPA looked at the number of stories as a life safety issue, and overall building height is related to fire department access."

Additionally, the area of a compartment where a fire may occur was studied. Related to the contents in the compartment, fire severity could be very large. Therefore, the group wanted to protect against this risk, using the compartmentation concept.

The group also studied compartment size if there was no suppression operating, and related the size of the fire to what the fire department could control. Occupancy specific area size increases were discussed in sprinklered and non-sprinklered buildings.

According to Koffel, chairman of the NFPA task group, NFPA chose to use an approach similar to the IBC Height and Area Table instead of the alternative tables developed by the NFPA Task Group. These tables were shelved and not used, but are contained as an alternative approach and published as an Annex in NFPA 5000. NFPA 5000 looks more at compartmentation than does the ICC

International Codes. Koffel's conclusion, "NFPA took a different approach to height and area."

At meetings in December 2006 and January 2007, fire service personnel seemed to advocate using compartmentation and sprinkler protection, detection and alarms, maintenance as key safety drivers in buildings, and not one technology over the other.

Kate Dargan, California State Fire Marshal, ICC Height and Area Study Co-Chair, stated that her paradigm for height and area is building construction and contents. "Sprinklers come on, control fire, but not always extinguish it, generating smoke." According to Dargan, alarms start going off, people come in/out of buildings disoriented due to smoke coming down from ceiling to the floor due to the heavier smoke from sprinkler operations cooling effect on the fire. "We'll give on the area separation walls, and fire walls, but we still want smoke barriers to stop smoke and keep some compartmentation in residential R2 occupancies," stated Dargan.

During debates, there was much discussion about statistical evidence showing that buildings are "safe as they are" right now because there have been no catastrophic events. Bert Polk, of the National Association of State Fire Marshals, commented. "The lack of an event does not mean it won't happen later..."

Richard Schulte, an independent consultant, commented on the impact of sprinklers in R1, R2 occupancies; these structures are already compartmented, have sprinklers, and structural fire resistance, have had excellent performance. However, Schulte claimed, "It's the sprinkler protection providing the safety."

Polk mentioned that there are lots of variables to consider in safety. "We've been looking at code in a static environment. In the real world, all areas of the country are not equal in water service, firefighter resources, and other important fire protection features."

Plus, building occupancies should be dealt with differently. "Why isn't there a different emphasis on where the most risk to life is, at nursing homes, places where people are impaired so they cannot exit on their own?" asked Polk. He also reminded us "the code is 'minimum acceptable level of safety' in the enforcement arena."

Although the committee's goal was to draft a single Height and Area Table Code change proposal acceptable to all parties, they were not successful after meeting in November, December 2006 and January 2007. The Height and Area Tables have been a subject of discussion for years, by ICC, the legacy codes, and NFPA as well.

It was very clear that after several study group meet-

ings there is much more to the discussion of Height and Area (Table 503, International Building Code) and building safety than just one fire protection technology. The parties, who agreed to talk about change, did...but could not reach conclusion.

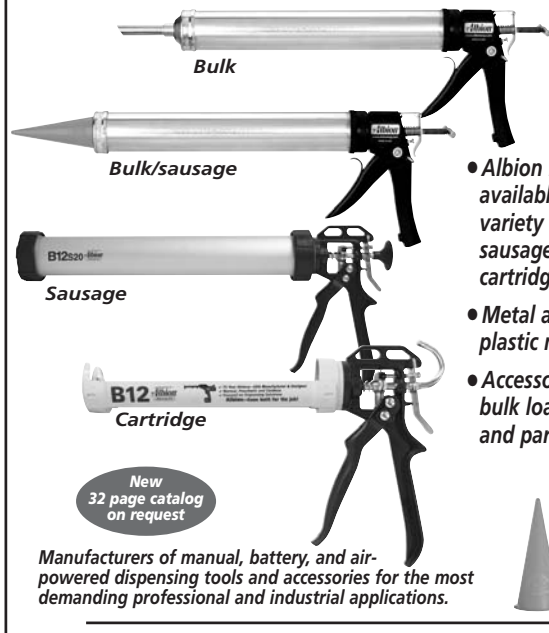
The discussion is about how all the variables in construction stack up against the built in protection - compartmentation, sprinklers, egress, alarms and detection and occupant behavior in emergencies - that make the difference in fire and life safety. Several believed that one technology for buildings is the right way to go, while others instead preferred 'layering' of protection for fire and life safety

Stay tuned for more reports on this debate from the ICC Final Action Hearings in Rochester, NY in late May, 2007. 🔥

Bill McHugh is executive director of the Firestop Contractors International Association. He recently attended the height and area height and area study group meetings about code change proposals for the International Building Code.

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Putting an End to the Tragic Equation

Tragedy could have been avoided, if only the emergency exits were used. How many times has that proclamation been delivered in response to a deadly fire or stampede at a public gathering place? Case after case shows that, despite beefed up safety regulations and improved reliability and functionality of egress hardware, emergency exits are often overlooked in the rush to flee a building. Finally, the obvious question is being asked; why were the emergency exits not used? The answer to that question is now taking a central role in efforts to improve building safety codes throughout the country.

As follow-up investigations have shown, during emergency evacuations, people tend to leave a building the same way they entered. Since most people typically enter a facility through the main entrance, an emergency or panic situation will create a rush of people trying to squeeze through the same exit—often with deadly consequences. When building occupants are asked why they didn't take advantage of emergency exits the response is usually the same; in the panic and confusion of the situation, the exits were difficult to locate.

This is especially true in fires. Because smoke rises, the natural and correct instinct is to get as close to the ground as possible. This same action, combined with the decreased visibility from the smoke, makes it nearly impossible to spot exit signs located above the doors. It becomes a tragic equation: low visibility + panic + undetectable exits = no escape. The logical solution to this vexing problem is to make exits easily detectable from the ground. Lawmakers across

the country are now doing their best to change the tragic equation by requiring low level exit signs and floor path lighting in buildings.

The need for greater egress lighting is well documented. The Providence Journal's extensive coverage of The Station nightclub fire includes firsthand testimony from patrons that were inside the West Warwick, RI club when a band's pyrotechnics display set fire to foam insulation. Robert Riffe, who was at the club with a friend, provided the Journal with a chilling, written account of his experience the night of February 20, 2003.

(The full account can be read at www.projo.com/extra/2003/station-fire/content/projo-20030223-first-person.86107bb.html).

Describing the first few seconds when flames erupted, Riffe, turned to his friend and, as reported in the Journal, stated, "Then after a couple of seconds and the flames began to grow, I turned to him and said, 'Let's get the hell out of here.' We both turned and headed for the main door, which like many people, was the only door we knew of."

Riffe goes on to describe the panic that ensued and the life-and-death struggle to get through the door. "As I got within inches from the doorway, I just came to a complete stop. I couldn't move. Being careful not to fall down and get trampled, I bent down, sucked up some air from the floor area where there was no smoke, held my breath, and pushed forward. I had gotten my head and torso out of the main door, so I was breathing fresh air, but my legs were caught in the middle of the people piled in the door way."

With assistance from a stranger, Riffe made it out and immediately tried helping others through the door. But the fire spread so rapidly there was little he could do. "I tried pulling on one man and could not get him to even budge the tiniest bit. I grabbed onto a woman who was trapped at the bottom, and could not get her to budge either. I felt so useless," he stated in the Journal.

"Just then, the flames reached the doorway and the people who I had just been trapped under, were now burning. I couldn't and I started to go into what I assume was a state of shock. I couldn't move." Riffe and his friend made it out alive. Of the 430 people inside the club that night, 100 died and approximately 200 were injured.

In his account of the incident, Riffe says the smoke obscured the visibility of exits.

"Also, just to put my opinion out there," his Journal account states, "I hope some kind of law is passed which requires lighted exit signs not to only be placed above the doors but near the floor as well. With the smoke being as thick and black as it was, no one was in anyway able to see the exit signs."

Soon after the fire, Rhode Island passed legislation that revamps the state's safety codes. Included in the legislation is a provision requiring floor proximity exit signs for all occupancies greater than 150. Buildings that meet the set criteria must be in compliance by Feb. 20, 2005.

Other states are following suit. Massachusetts lawmakers passed a bill that overhauled the state's fire safety codes. The code changes are based on

a report created by a special task force that reviewed Massachusetts codes in response to The Station fire. The task force made several recommendations addressing building egress, including enhancing exit identification with low-level path lighting leading to exits, outlining exit doors with luminescent marking, distinctive exit sign lighting and requiring regular testing and maintenance of exit signs and lights.

New York City is taking similar steps to improve the visibility of emergency exits. A new law requires all non-residential buildings greater than 100 ft to be outfitted with photoluminescent exit path markings and secondary exit signs on all doors opening to corridors, exits or exit passageways.

The law is based on recommendations set forth by the World Trade


Center Building Code Task Force. Comprised of experts from government, the real estate community, and the design and construction professions, the task force was created after the Sept. 11, 2001 terrorist attacks to evaluate the safety of high rise buildings. If the bill passes, all affected buildings would have to comply with the safety regulations by the end of 2005.

California is ahead of other states in egress lighting codes. The state has already adopted code language (1013.51a Path Marking) requiring floor-level exit signs and path marking systems under certain conditions.

Manufacturers are doing their part to come up with products that improve life safety.

New luminescent technologies are

being used to produce floor path lighting systems that are clearly visible in low light conditions. Door hardware manufacturers are incorporating these same technologies to turn everyday locking products into secondary exit signs, directing egress traffic directly to the latch release mechanism of exit hardware.

Fire safety officials in the states adopting the new regulations hope the new building codes and egress products will, together, put an end to the tragic equation. Look for political momentum to carry similar regulations to states and municipalities across the country as each jurisdiction looks to improve public safety. 

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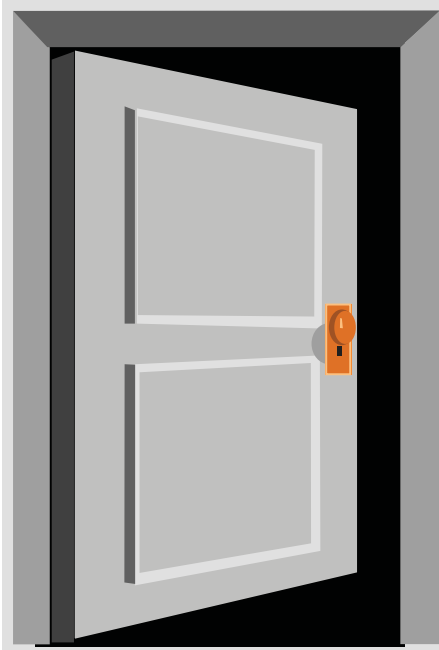
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Understanding the Updated NFPA 80 Standard



Fire and smoke doors allow emergency egress, then protect compartmentation."



Regular inspections and education prevents fire door's from being propped open inappropriately

by Keith Pardoe, DAHC, CDC/CDT

Compartmentalization. Compartmentation. Containment. Protection. Preservation. Safety. Security. These are just buzz words, right? They're marketing ploys designed to create a heightened level of self-importance of the work we perform or the products we use every day of our working lives, right? Without fully understanding the context in which these words are used, it is easy to see how eyes begin to glaze over, mouths begin to yawn and minds begin to wander and daydream. The little voice in the back of your mind begins to shout, "Look out, here comes another boring article on codes and standards!"

Well, for once that little voice is partially right. This article is about codes and standards. Specifically, it is about a soon-to-be-released updated standard that should be familiar to all of us - NFPA 80. I trust that by the end of this article you will agree that it is anything but boring. I'll let you be the judge.

Since its inception in the late 1800s, early 1900s, the National Fire Protection Association's pamphlet 80, Standard for Fire Doors and Fire Windows, has evolved, becoming ever-increasingly more important with each edition. It ensures occupants of modern buildings and structures are properly and practically protected from spread of flames and smoke by all types of fire-resistance-rated doors.

All of the model building codes, which includes ICBO's Uniform Building Code (UBC) - 1997,

SBCCI's Standard Building Code (SBC) - 1999, BOCA's National Building Code (NBC) - 1999, ICC's International Building Code (IBC) - 2006 and NFPA's 5000 Building Construction and Safety Code - 2006 reference NFPA 80 as the de facto standard for the installation and maintenance of fire-resistance-rated door assemblies. Two additional codes of equal importance are the ICC's International Fire Code (IFC) - 2006 and NFPA's Uniform Fire Code (NFPA 1) - 2006. These latter codes are used frequently by Authorities Having Jurisdiction (AHJs) when they perform inspections of existing buildings and structures. Last, but certainly not least, let's not forget NFPA 101, The Life Safety Code™ - 2006. It, too, refers to NFPA 80 for the installation of fire-resistance-rated door assemblies and has some application in our industry.

You may have been told that NFPA 80 is important, but now you are perhaps beginning to appreciate just how important this document is in our society. It's all around us. Every non-residential building has been built using a version of NFPA 80. The 2007 edition of NFPA will be perhaps the most important issue to the architectural swinging door opening industry.

In early 2006, NFPA's Fire Doors and Windows (FDW-AAA) technical committee completed its task of updating and expanding NFPA 80. On July 28, this updated standard was officially issued by the NFPA Standards Council and was published late in 2006 with a 2007 edition date. Many changes and addi-

tions have been incorporated in the 2007 edition of NFPA 80 - too many to name in this article. However, some examples are that in addition to editorial and formatting changes bringing it into accordance with the NFPA Manual of Style, the content of NFPA 80 has been reorganized. Requirements for swinging doors with builders hardware have been moved from Chapter 2 to Chapter 6 and the care and maintenance requirements, which were formerly in Chapter 15, are now in Chapter 5. New chapters have been added for fire curtains and fire dampers respectively. NFPA 80's title has been changed to Standard for Fire Rated Doors and Other Opening Protectives to reflect the expanded content of the new document.

There are many changes to NFPA 80 but the most significant change, without a doubt, is the requirement for fire-resistance-rated door assemblies to be inspected annually. Stop for a moment and let that sink in. All fire-resistance-rated door assemblies are going to be annually inspected! We are not just talking about swinging doors with builders hardware being inspected. We're talking about all fire-resistance-rated door assemblies being required to be annually inspected. That means overhead rolling fire doors, horizontal-sliding fire doors and fire-resistance-rated access doors - to name a few.

Why Are Annual Inspections Required?

NFPA 80 has required the frequent inspection of fire-resistance-rated doors, and their immediate repair, for what seems like forever. The problem is that it is nearly impossible to define "frequent." Does it mean every day, once a month, twice a year, once a year or some other peri-

od of time? One of the dilemmas created by the former language was that the individuals responsible for performing these frequent inspections - the building owners and managers - didn't know: 1) these inspections were necessary; 2) what to inspect the openings for; and, 3) how to go about repairing or replacing these items. Think about it, the people charged with the proper care and maintenance of fire-resistance-rated opening protectives never knew NFPA 80 existed, or that it placed responsibility with them for maintaining these openings. And, in the cases where building owners and managers did know they were responsible for these openings, they may not have been educated about what to inspect the openings for nor how to evaluate them to be sure the openings were complete and working properly.

Some might argue that fire-resistance-rated openings are inspected every time an occupant passes through them. While that may seem like a reasonable observation on the surface, we really need to think about the users of these openings. Most will not be paying close enough attention to see if the latch is securely engaged in the strike when the door closes. They may not even be aware of whether the door closes all the way each and every time it is opened. Face it, they like kick-down door holders! No, the typical occupants of a building are not the best choice for making sure fire-resistance-rated door assemblies are installed and maintained properly.

Those in the architectural openings industry have a higher awareness of the products, assemblies and systems used on fire-resistance-rated door assemblies. We work with these products day in and day out. When

we are out in public we are constantly pausing to look at all types of door openings. Sometimes we see some really well-done openings, but are also amused (and sometimes, alarmed) by what we see; especially when we are looking at fire-resistance-rated openings.

The simple fact of the matter is that the majority of people will only pay attention to a door when it doesn't work properly. That is, properly according to the perception of how a door should work. For example, fire-resistance-rated doors are designed to be self- or automatically-closing. Self-closing doors become a nuisance to the occupants when they have to manually hold them open to move equipment or arm loads of boxes and such through the openings. They become frustrated with the doors trying to close. And, the next thing you know, they are blocking the doors open or taking the closer arm apart or adding the seemingly ever-present kick-down door holder! There, they've beaten the door. They've stopped it from being a nuisance. They are oblivious to the fact that they have just defeated their very first line of protection in a fire emergency.

What Will Inspections Involve?

We know there are hundreds of products designed to be installed on fire-resistance-rated openings. And, this translates into thousands of combinations of products that have been used over the years. You might wonder how anyone is going to be able to inspect fire-resistance-rated openings. It is almost overwhelming when you try to envision all the possible combinations of doors, frames and hardware that are already in use. That is a valid concern and one that the FDW-AAA committee was

able to address when they constructed the inspection language.

Former editions of NFPA 80 have established guidelines for the installation and maintenance of fire-resistance-rated doors. There are certain baseline elements, which are common to all swinging doors with builders hardware no matter when they were installed. The 2007 edition of NFPA 80 simply requires these baseline elements to be inspected on an annual basis.

Chapter 5, section 5-2 Inspections, paragraph 5-2.4 Swinging Doors with Builders Hardware lists the elements that are required to be inspected. It requires, "fire door assemblies to be visually inspected from both sides to assess the condition of the assembly."

Swinging Doors with Builders Hardware will be inspected to verify the following:

1. No open holes or breaks exist in surfaces of either the door or frame.
2. Glazing, vision light frames, and glazing beads are intact and securely fastened in place, if so equipped.
3. The door, frame, hinges, hardware and non-combustible threshold are secured, aligned, and in working order with no visible signs of damage.
4. No parts are missing or broken.
5. Door clearances at the door edge to the frame, on the pull side of the door, do not exceed clearances listed in 4.8.4 and 6.3.1.
6. The self-closing device is operating by verifying that the active door will completely close when operated from the full open position.
7. If a coordinator is installed, the inactive leaf closes before the active leaf.
8. Latching hardware operates and secures the door when it is in the closed position.

9. Auxiliary hardware items, which interfere or prohibit operation, are not installed on the door and frame.

10. No field modifications to the door assembly have been performed that void the label.

11. Gasketing and edge seals, where required, are inspected to verify their presence and integrity.

I think you'll agree these are elements that are common to all swinging doors with builders hardware. How many fire-resistance-rated openings have you witnessed that had at least one of the problems on this list? How about fire-resistance-rated door assemblies that were initially installed correctly, but had access-control devices added to them afterwards, which compromised the fire-stopping integrity of the entire opening? I am sure you have seen kick-down door holders, leaking door closers, broken or missing latchbolts, misaligned strike plates and unused holes from moving or replacing hardware items. These items seem like a small problems, but in the context of a fire emergency, their importance becomes readily apparent. If the door isn't closed and latched at the time of the fire, it simply cannot protect the occupants as it was intended to do.

Who Will Conduct Inspections?

We agree that inspection of fire-resistance-rated door assemblies is a good thing. Who is going to do these inspections?! Again, the FDW-AAA committee had the foresight to recognize that these inspections have to be performed by individuals who are knowledgeable about inspections. Paragraph 5-2.3 Functional Testing, requires functional testing of fire-resistance-rated door and window

assemblies to be performed by individuals with knowledge and understanding of the operating components of the type of door (or window) being subject to testing.

In our case, swinging doors with builders hardware will require individuals who have broad product-application knowledge and understanding of fire-resistance-rated door assemblies and systems. AHJ's may not have the necessary knowledge - or, more importantly, the time - to perform these inspections. Heaven knows, they have their hands full with inspecting all of the other building systems and components. While NFPA 80 does not designate a specific group or groups to perform these inspections, it does open the door (pun intended) for our industry to lead the way. And, that is precisely what the leadership of the Door and Hardware Institute (DHI) is intending to do - more on this later.

How Will Inspections Be Performed?

NFPA 80's language in paragraph 5-2.1 requires fire door assemblies to be inspected "not less than annually, and a written record of the inspection shall be signed and kept for inspection by the AHJ." Basically, this requirement creates an inspection system similar to that for elevators, sprinkler systems and fire-alarm systems. These inspections are performed by third-party entities. Written proof of these inspections is held by the building owner/property management for review by the AHJ.

In the case of inspecting swinging doors with builders hardware, these inspectors will be required to document the date and time of the inspections, as well as identify openings that have deficiencies. This report will be provided to the build-



ing owner and manager to be kept on file. It's important to remember that the owner is ultimately responsible for making sure the fire-resistance-rated door assemblies are in compliance with NFPA 80, not the inspector. Once the owners and managers are made aware that there are openings with problems, they have to take action to repair or replace them. In fact, paragraph 5-2.15 Repair of Fire Doors and Windows requires these repairs to be made immediately, which means that once the owners and managers are made aware there are deficiencies they are obligated to correct them, or suffer the consequences.

Performance-Based Inspection Cycle

The FDW-AAA committee was concerned with how large buildings, institutions and campuses would be able to inspect each fire-resistance-rated door assembly every year. Think of the large hotels in Las Vegas. These hotels have thousands of guest rooms - each with a fire-resistance-rated door assembly - and many, many more fire-resistance-rated door assemblies in the common areas (e.g., stair towers, corridors, restaurants, meeting rooms, casinos, etc.). Inspecting the fire-resistance-rated door assemblies would be a never-ending process for buildings like these.

These situations are provided for in the language of paragraph 5-2.2 Performance-Based Option. Under the Performance-Based Option a facility may have an extended inspection cycle, provided it is approved by the AHJ. The full description of the Performance-Based Option is described in Annex J of the 2007 edition of NFPA 80.

How Soon Will Inspections Begin?

Realistically speaking, it will be a few years before these inspections will become required and maybe several more years before these inspections become commonplace. Once the 2007 edition of NFPA 80 is published it will not become enforceable until it is referenced in the building codes. Already, the ICC is beginning its work for the 2009 edition of the International Building Code and International Fire Code. NFPA is beginning its next cycles for the Uniform Fire Code, NFPA 101 and NFPA 5000. It will take time to notify the AHJ's that there is a new requirement for inspecting fire-resistance-rated door assemblies and to let them know we are here to help.

What Role Will DHI Play?

The DHI Board of Governors has assembled a task force of volunteers to help us form the structure for the inspection process. These volunteers are charged with developing the inspection forms, certificates and labels. They are working with Underwriter's Laboratories and Intertek/Warnock Hersey to help us reach the AHJ community and begin to teach them about the annual inspection of fire-resistance-rated door assemblies, as well as designing a new model for companies performing these door inspections.

Additionally, the task force is helping us design a new level of training that will be added to the education program. Our plan is to create a new level of certification for individuals who are inspecting swinging doors with builders hardware. This certification will be earned by successfully completing a series of DHI training classes. As you may imagine, the individuals performing these inspections need to have broad product-application knowledge, which means they will most likely be people who have been in our industry for approximately five years. DHI's Education Council (EC) and Board of Certification (BOC) will begin their respective work for making these classes and certification a reality.

Our mid-term vision, say 10 years down the road, is that AHJ's will expect to see inspection reports from DHI-certified door inspectors. We want AHJ's to have a high-level of confidence when they see reports from our inspectors. When they see reports from non-DHI certified door inspectors, they may need to inspect the buildings more closely to be sure they have been properly inspected.

What Can Be Done Now?

Commodities, components, openings or systems? How do you view the doors, frames and hardware products you work with every day? Many in our industry look upon these products as merely commodities and individual components. Yeah, fire-resistance-rated doors have some special requirements (and sometimes we may view these more as a nuisance than a necessity), but we mostly look at them as components rather than complete openings or even systems. It's easy to understand how we might become a bit

jaded in our opinion of these products. These products have become commonplace to us, which makes us complacent in how we view them.

We need to begin looking at the installed products as complete fire-resistance-rated assemblies rather than individual components. We need to recognize the serious level of protection that each opening must provide in a fire. Thankfully, we know the majority of fire-resistance-rated openings will never have to provide that protection. But since we don't know which ones will, we have to treat each one as though it is the one that will be protecting us or our loved ones.


Distributors can begin to place higher emphasis on the fire-resist-

ance-rated openings they are supplying to contractors. For example, a notice at the front of door and hardware schedules that informs the architect, contractor and owner that fire-resistance-rated door assemblies require special attention during installation would be a good beginning. Double-checking newly installed fire-resistance-rated openings and letting the installer know when there are problems is another good first step.

What's Next?

You will be seeing and hearing more and more about the annual inspection of fire-resistance-rated doors over the next 18 to 24 months. Exactly what the training program

will be, or how the inspections will be performed, is yet to be determined. Many details still need to be developed and we have begun reaching out to the AHJ community. One thing is for sure; it's going to help to make all of us safer once its up and running.

Now, was this just another boring article on codes and standards? 

Keith Pardoe is Technical Director for the Door and Hardware Institute. This article, which first appeared in the October 2006 issue of Doors and Hardware magazine, was reprinted with the permission of the Door and Hardware Institute.



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Code Corner

Industry News

This month's standards and industry news is devoted to the ICC code development process.

Tracking the ICC Code Change Process

In September, building code officials, fire marshals and industry representatives met for International Code Council (ICC), Code Development Committee hearings. This is the first round in the Code Development Process. The following article describes the actions taken thus far in the process specific to effective compartmentation.

At these hearings, code change proposals submitted to ICC are compiled, reviewed and voted upon by the code committee, of which there are several. Means of Egress, Fire, Fire Safety, Structural, and other chapters in the codes have committees that hear code change proposals. If anyone (yes, anyone) disagrees with the committee or assembly action or decision, they can submit a Public Comment for further debate at the Final Action Hearings. These public comments were submitted to ICC Jan. 23.

On May 17-26, ICC Code Development Final Action Hearings take place in Rochester, NY. This meeting is the final debate about code change proposals from the 2006/2007 code cycle that started in March 2006. Once finished, the code development cycle starts over again, with initial code change proposals for the 2007/2008 cycle due in mid-August 2007.

ICC Committee Hearings

At the initial code committee hearings in Orlando, there were several important code changes aimed at increasing the importance and reliability of effective compartmentation and its components. The Firestop Contractors International Association (FCIA), the National Association of State Fire Marshals, International Firestop Council, Fire Rated Glazing Industry, International Association of Firefighters, and others introduced proposals. The code change proposals ranged from labeling of fire compartment elements such as fire and smoke resistance rated walls, adding a definition for compartmentation to Chapter 7, returning fire resistance rated corridors and area separations to all occupancies of buildings, and many others.

Specific Code Change Proposals

Currently, there is no mention of compartmentation in Chapter 7 of the building or fire codes other than in Chapter 4 of the International Building Code, underground buildings.

FCIA submitted code change proposal **FS6-06/07**, which would have added the following definition to IBC Chapter 7 for Compartmentation: "Fire-and smoke-resistance-rated construction separations of adjacent spaces to safeguard against the spread of fire and smoke within a building and the spread of fire to or from buildings."

The proposal was not approved by the committee in September. Comments at the hearings ranged from "maybe we should change the title of Chapter 7 to Compartmentation," to "there needs to be further study." FCIA chose not to public comment the code change for the hearings in May, instead focusing on important reliability issues in the code for this cycle.

FCIA also introduced the systems concept to Chapter 7 of the code through **FS1-06/07**, which was approved by the committee. This proposal requested the building code reflect the way the complete industry describe their products that have been listed as suitable for a specific use, like firestop system.

FCIA also proposed changes that supported the concept that properly designed, installed, inspected and maintained effective compartmentation is very reliable. Our concept was to bring the same importance to effective compartmentation as it exists in other parts of the code.

Prior to the hearings, FCIA was told by industry leaders that these code changes were credible, seeking to look inside our industry for improvements furthering fire and life safety. Even the typical opposition to effective compartmentation commented the changes were reasonable.

Feedback from the ICC code development committees were that these code change concepts were on the right track, but needed further research to be technically correct code language.

Code Change **FS 2-06/-7** attempted to bring the same "design, install, inspect and maintain" language to Chapter 7 that exists in Chapter 9, Sprinklers. Chapter 9 has special attention for modifications that require special attention. FCIA felt strongly about this concept, and publicly commented to bring the concept back for further debate.

Here's the code change. **"701.2 Modifications.** No person shall remove or decrease any fire-resistance-rated construction and structural fire resistance installed or maintained under the provisions of this code or the International Fire Code without approval by the building official." The original language was well received, but too restrictive. Therefore, we've submitted that if fire-resistance rated construction is to be decreased, it needs AHJ review.

In **FS 3-06/07**, FCIA requested acceptance testing similar to that required in the detection and alarm, sprinklers, Chapter 9 of the code. The code change was disapproved by the committee. FCIA did not public comment the code change, but instead decided to do further research on the concept.

Inspection Standards

The International Firestop Council (IFC) submitted **S-40-06/07**, a move to have the ASTM E-2174 & ASTM E-2393 Firestopping Penetration and Joint Inspection Standards inserted into the structural sections of the code. That was disapproved. IFC also submitted **G23-06/07**, to add inspection standards to Chapter 1 of the building code, which was also defeated. FCIA supported both of these proposals, which bring inspection the 'design, install, inspect and maintain' philosophy that FCIA and the effective compartmentation industries are pursuing.

Construction Documents

FCIA's **F58-06/07** public comment reflects the committee's response to FCIA about Construction Documents, that the code change proposal may have been too restrictive. Therefore, FCIA adjusted the code change through public comment that Construction Documents be required only for altering fire-resistance-rated construction where the modification affects performance, and only in assembly, institutional and educational occupancies. It's critical to protect where the most lives are at risk, in these critical occupancies.

Installation Standards

FCIA submitted **F60-06/07**, where a statement of compliance be issued by the contractor for final approval by the fire code official, stating that the fire protection systems have been installed to approved plans and to quali-

fied or approved processes, in all A, I, and E occupancies.

FCIA's reasoning is to focus on the last part of the sentence, rather than the first, approved processes. This requirement is a proof that the contractor understands the effective compartmentation fire protection installation "zero tolerance" process. In the firestopping industry, the process protocol would be FM 4991, Standard for the Approval of Firestop Contractors or the UL Qualified Firestop Contractor Program and the FCIA Firestop Industry Manual of Practice, where "approved processes" reside.

Area Separations

The International Firestop Council submitted **G150-06/07**, a proposal to have fire-resistance-rated mixed use occupancy separations put back into the International Building Code. The code change addresses code change G32. Code change G32 in the 04/05 code development cycle claimed insignificant technical changes when the IFC and FCIA believed there were significant reductions in fire resistance. G32, in fact, eliminated separations in many cases.

The following is the technical reasoning provided by Bill Koffel, FCIA's Code Consultant. "Using the IBC 2006, what would be the allowable area of a building of Type IB construction with a Group S-1 and Group B occupancy within the building? If the design professional chooses to use the separated occupancy approach according to Table 508.3.3 (IBC 2006) there is no separation required between the two occupancies. Using the sum of the ratios provisions of Section 508.3.3.2, the building could consist of a storage area just less than 48,000 sq ft and an office area of unlimited area with no separation between the occupancies. Before comparing this to the other options, it should be noted that the presence of a storage fire area would require automatic sprinkler protection so the allowable area of the storage space would actually increase based upon the appropriate area modifier for sprinkler protection. While this example could also occur using the IBC 2003, an occupancy separation having a fire resistance rating of at least a two hour fire resistance rating (assuming a one hour reduction due to sprinkler protection) would have been required."

The proponent of G32-04/05 also describes occupancies such as Group B, F-1, M, and S-1 as being "ordinary

hazard commercial occupancies with mildly different fuel loading and risk." If that were the case, why are they different occupancy classifications? Why are there different height and area restrictions? Why are there different thresholds for sprinkler and fire alarm systems? Is it not true that the occupant load of a mercantile occupancy is anticipated to be significantly different than that of a storage occupancy? Is it not true that the fuel load of an office building in which the sprinkler system is designed for light hazard is significantly different from a Group M (sprinkler system designed for Ordinary Hazard Group 2) or a storage occupancy where the sprinkler design criteria is likely to be Ordinary Hazard Group 2 or greater?

Lastly, the proponent of G32-04/05 claims that the "high fire resistance ratings" in the IBC 2003 are associated with the requirements for separating fire areas within a given occupancy. However, this was not the case. During the development of the IBC there was consider-

able discussion as to whether the fire area separation requirements belonged in the table at all. A comparison with previous editions of the IBC, earlier drafts of the IBC, BCMC Reports, and the legacy codes demonstrate that in most cases the fire resistance ratings for mixed occupancies in the IBC 2003 have been utilized for years, even prior to the introduction of the fire area concept into the BOCA National Building Code.

Corridor Protection

For code change **E128-06/07**, FCIA introduced the use of statistics supporting the use of effective compartmentation, sprinklers, detection and alarms, occupant education.

FCIA's hypothesis is based on basic building research that in the top 20 US cities, there are over 11,000 high rise buildings. The top five cities account for 70% of these buildings. These cities are New York, Chicago, Honolulu, Los Angeles, San Francisco.

There is a common element in these numbers and cities. New York and Chicago both have a large stock of older buildings built with compartmentation as their basis of fire protection, with sprinklers, detection and alarms added at later dates. Honolulu, Los Angeles and San Francisco were built using the Uniform Building Code, with compartmentation, structural fire resistance, detection and alarms, plus sprinklers as the basis. Therefore, the inference that sprinklers alone have produced statistics of safe buildings may not be the whole story. These buildings relied on all types of fire protection building features and occupant behavior - compartmentation, sprinklers and detection/alarms, occupant education - to produce these statistics that buildings are safe.

The Fire Rated Glazing industry submitted **E129-06/07**. Bill Koffel, of Koffel Assoc., proposed to add fire partitions in corridors for education occupancies, which was disapproved by the committee.

ICC's Terrorism Resistant Buildings Committee, headed by New Jersey Department of Buildings' Bill Connolly, submitted E137-06/07, that "exit stair enclosures should be continuous from top to bottom of high rise corridors, eliminating transfer corridors." Although disapproved by the committee, look for a public comment on this important change to improve egress from emergencies of any type in buildings.

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Labeling of Fire Barriers

The International Firestop Council and International Association of Fire Fighters submitted separate code change proposals to add labeling "FIRE AND SMOKE BARRIER PROTECT ALL OPENINGS" to walls of buildings where applicable. This would provide notice to all who touch fire and smoke barriers that they are important, and should be protected. While the method, label design, and wording may need to change, FCIA believes this is part of the proper design, install, inspect and maintain concept for effective compartmentation.

For the fire rated glazing industry, **FS36-06/07** submitted by Koffel on behalf of the Fire Rated Glazing Industry, had a code change approved by the committee. "Labeling of glass supplied, when tested to ASTM E 119, shall have label or identification showing the name of the manufacturer, their test standard and the identifier 'W-XXX' where the 'XXX' is the fire resistance rating in minutes. Such label or identification shall be issued by an approved agency and shall be permanently affixed to the glazing."

For the swinging fire door industry, and the Door Safety Council, code change proposal **E47-06/07** was approved as modified. This code change dealt with the

fact that pinning devices for fire doors, once activated, should lock doors in place. FCIA testified in support of this code change citing that listed systems for the particular application are needed, regardless of the type of compartmentation feature.

ICC Final Action Hearings

FCIA and many others submitted public comments in preparation for the ICC final action hearings in Rochester, NY. The FCIA code change proposals presented in September were focused at introducing three concepts to the International Code Council: "Fire, smoke and other resistance-rated compartmentation concept" "Systems", and "Design, Install, Inspect and Maintain" builds reliability.

Although there were code change proposals that were successful, there were some that were disapproved. Those that were approved, if not public commented by someone, become part of the code.

FCIA looks forward to the 2006/2007 Final Action Hearings, where public comments will be debated for inclusion in the building code.

Testing & Qualification News

FCIA to Hold Spring Conference

FCIA's Education and Committee Action Conference takes place May 2-4. The conference features education programs about Firestopping and Effective Compartmentation. Don't miss the FCIA roundtable committee meetings that bring the industry to one place to discuss important issues, make plans, and get things done. FM 4991 Standard for Approval of Firestop Contractors Program DRI / UL Qualified Firestop Contractor Program DRI Education and Testing takes place at this conference, plus take a tour of UL's world renowned compartmentation fire test, sprinkler, and alarm testing facility. Visit <http://www.fcia.org> for more information

FCIA and Compartmentation Industries Lead Quality Process

FCIA is leading the way developing the subcontractor quality process. FM 4991 Standard for the approval of firestop contractors was the first program of its type. UL's Qualified Firestop Contractor Program has recently been introduced. We also understand that the SMACNA Contractors are in discussions for a similar program. The Door and Hardware Institute is working on an inspector qualification program for the swinging door industry while FCIA and IFC are working on a program for the Firestopping Inspection industry. Watch for more as the effective compartmentation industry continues to develop the 'design, install, inspect and maintain' philosophy in each industry to provide greater in place quality of fire and life safety systems.

Life Safety Digest 2007 Industry Calendar

May 2 to 4

FCIA Education and Committee Action Conference, Chicago

May 3 to 5

American Institute of Architects National Convention and Design Expo, San Antonio

April 24 to 26

International Firestop Council Meetings, Deerfield Beach, Fla.

May 18 to 26

ICC Codes Forum, Rochester, NY

May 23 to 27

Construction Specifications Canada, Vancouver, British Columbia, Canada

June 4 to 7

NFPA World Safety Conference & Expo, Boston

June 20 to 22

Construction Specifications Institute, Baltimore

July 9 to 13

National Association of State Fire Marshals, Atlanta

July 21 to 24

BOMA North American Commercial Real Estate Congress and the Office Building Show, New York

Aug. 23 to 25

Fire and Rescue International (IAFC), Atlanta

Oct. 14 to 19

Society of Fire Protection Engineers Professional Development Conference and Exposition, Las Vegas

Oct. 15 to 20

Door and Hardware Institute Conference & Exposition, Nashville, Tenn.

Oct. 21 to 25

SMACNA Annual Convention, Phoenix

Nov. 7 to 9

FCIA Firestop Industry Conference & Trade Show, South Florida

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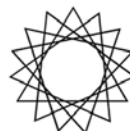
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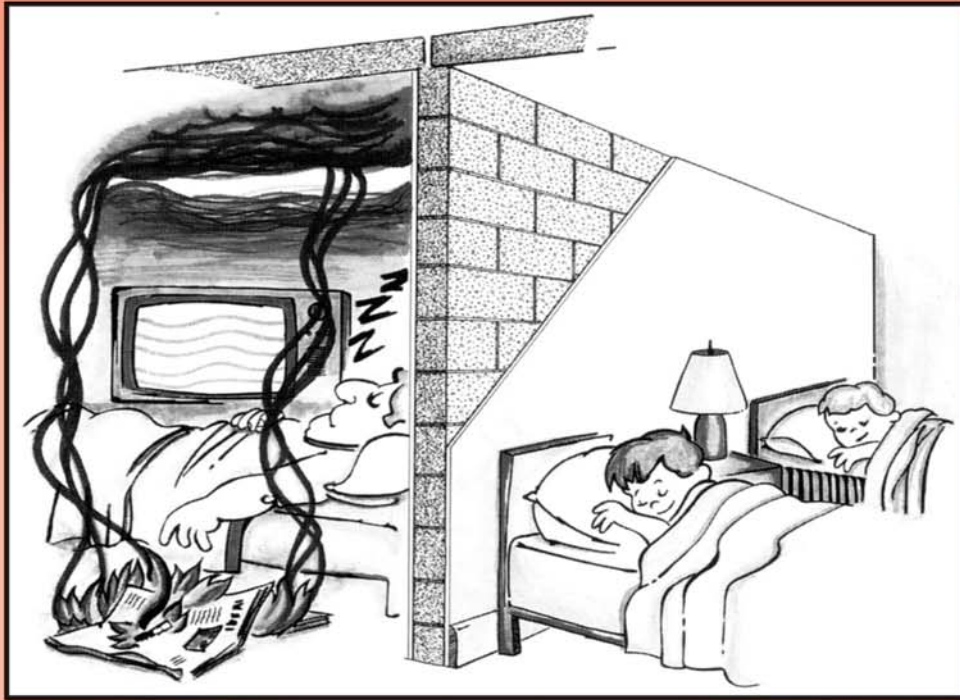


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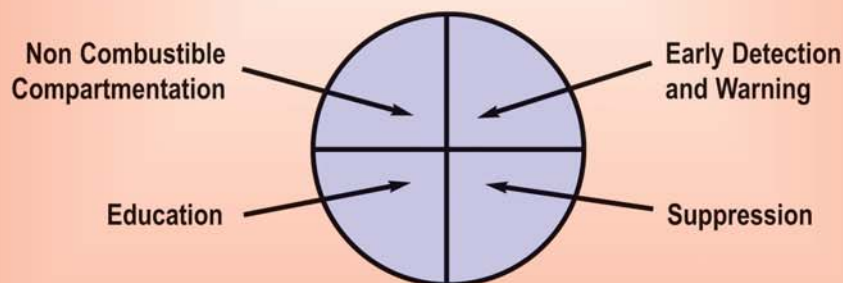


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